

**ABSTRACT OF THE DISCLOSURE**

The present invention provides low cost microfluidic devices having embedded metal conductors. The devices of the invention comprise a electronic component comprising a substrate having a first surface, a layer of electrically-conductive material deposited on a portion 5 of the first substrate surface, a first sublayer of electrically-insulating material deposited on the first substrate surface and on the layer of electrically-conductive material, a second sublayer of electrically-insulating material deposited on the first sublayer of insulating material, and a third sublayer of electrically-insulating material deposited on the layer of dielectric material, and a fluid-handling component having a contoured surface affixed to the electronic component. The 10 devices of the invention are advantageously used for performing electric field lysis and the polymerase chain reaction. The invention further advantageously provides simple, low cost methods for fabricating such microfluidic devices.